

### Amendments to the Claims:

1-5 (cancelled)

6 (currently amended): An interleaver comprising:

a birefringent element assembly providing two interim output components optical beams, which are generally orthogonal to each other in polarization direction, for one input optical beam at the interleaver input;

a reflector configured to direct the two interim output components optical beams ~~from the birefringent element assembly~~ back through the birefringent element assembly to the interleaver output;

~~The interleaver as recited in claim 1,~~

wherein the birefringent element assembly comprises three birefringent elements which are orientated to provide birefringent phase delays to the optical beams passing through them; and

the phase delays and the angular orientations of birefringent elements of the birefringent element assembly are selected from the following table such that two final output optical beams, wherein each final output optical beam consists of a group of optical components of interleaved optical wavelengths, are obtained at the interleaver output for the input optical beam:

Table III

<u>First Stage Phase Delays</u>	<u>First Stage Orientations</u>	<u>Second Stage Phase Delays</u>	<u>Second Stage Orientations</u>
$\Gamma + 2m_1 \pi$ , $2\Gamma + 2m_2 \pi$ , $2\Gamma + 2m_3 \pi$	$\varphi_1, \varphi_2, \varphi_3$	$2\Gamma' + 2k_3 \pi$ , $2\Gamma' + 2k_2 \pi$ , $\Gamma' + 2k_1 \pi$	$90^\circ \pm \varphi_3, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_1$ (parallel component) $\pm \varphi_3, \pm \varphi_2, \pm \varphi_1$ (orthogonal component) where $\Gamma - \Gamma' = 2l\pi$
$\Gamma + 2m_1 \pi$ , $2\Gamma + 2m_2 \pi$ , $2\Gamma + 2m_3 \pi$	$\varphi_1, \varphi_2, \varphi_3$	$2\Gamma' + 2k_3 \pi$ , $2\Gamma' + 2k_2 \pi$ , $\Gamma' + 2k_1 \pi$	$90^\circ \pm \varphi_3, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_1$ (parallel component) $\pm \varphi_3, \pm \varphi_2, \pm \varphi_1$ (orthogonal component) where $\Gamma - \Gamma' = (2l + 1)\pi$
$2\Gamma + 2m_3 \pi$ , $2\Gamma + 2m_2 \pi$ , $\Gamma + 2m_1 \pi$	$\varphi_3, \varphi_2, \varphi_1$	$\Gamma' + 2k_1 \pi$ , $2\Gamma' + 2k_2 \pi$ , $2\Gamma' + 2k_3 \pi$	$90^\circ \pm \varphi_1, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_3$ (parallel component) $\pm \varphi_1, \pm \varphi_2, \pm \varphi_3$ (orthogonal component) where $\Gamma - \Gamma' = 2l\pi$

<u>First Stage Phase Delays</u>	<u>First Stage Orientations</u>	<u>Second Stage Phase Delays</u>	<u>Second Stage Orientations</u>
$2\Gamma + 2m_3 \pi$ , $2\Gamma + 2m_2 \pi$ , $\Gamma + 2m_1 \pi$	$\varphi_3, \varphi_2, \varphi_1$	$\Gamma' + 2k_1 \pi$ , $2\Gamma' + 2k_2 \pi$ , $2\Gamma' + 2k_3 \pi$	$\pm \varphi_1, \pm \varphi_2, \pm \varphi_3$ (parallel component) $90^\circ \pm \varphi_1, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_3$ (orthogonal component) where $\Gamma - \Gamma' = (2l + 1) \pi$

wherein  $m_1, m_2, m_3, k_1, k_2, k_3$  and  $l$  are integers ( $0, \pm 1, \pm 2, \dots$ ).

7-11 (cancelled)

12 (previously amended): The interleaver as recited in ~~claim 4~~ claim 6, wherein the birefringent element assembly comprises a first birefringent element having an angular orientation of  $\varphi_1$ , a second birefringent element having an angular orientation of  $\varphi_2$  and a third birefringent element having an angular orientation of  $\varphi_3$ ;

wherein an order of the first birefringent element, second birefringent element, and third birefringent element is selected from the group consisting of:

first birefringent element, second birefringent element, third birefringent element;  
 third birefringent element, second birefringent element, first birefringent element;  
 and

wherein the angular orientations are with respect to a polarization direction of light entering the birefringent element assembly.

13 (previously amended): The interleaver as recited in ~~claim 4~~ claim 6, wherein the birefringent element assembly comprises:

a first birefringent element having an angular orientation of  $45^\circ$  with respect to a polarization direction of light input to the birefringent element assembly and has a phase delay of  $\Gamma$ ;

a second birefringent element has an angular orientation of  $-21^\circ$  with respect to a polarization direction of light input to the birefringent element assembly and has a phase delay of  $2\Gamma$ ; and

a third birefringent element has an angular orientation of  $7^\circ$  with respect to a polarization direction of light input to the birefringent element assembly and has a phase delay of  $2\Gamma$ .

14 (currently amended): An interleaver comprising:

a birefringent element assembly providing two interim output components optical beams, which are generally orthogonal to each other in polarization direction, for one input optical beam at the interleaver input;

a reflector configured to direct the two interim output components optical beams from the birefringent element assembly back through the birefringent element assembly to the interleaver output;

~~The interleaver as recited in claim 1,~~

wherein the birefringent element assembly comprises two birefringent elements which are orientated to provide birefringent phase delays to the optical beams passing through them; and

the angular orientations ( $\varphi_1$  and  $\varphi_2$ ) and the corresponding phase delays of the two birefringent elements are selected from the following table such that two final output optical beams, wherein each final output optical beam consists of a group of optical components of interleaved optical wavelengths, are obtained at the interleaver output for the input optical beam:

Table III

<u>First Stage Phase Delays</u>	<u>First Stage Orientations</u>	<u>Second Stage Phase Delays</u>	<u>Second Stage Orientations</u>
$\Gamma + 2m_1 \pi$ , $2\Gamma + 2m_2 \pi$ , $2\Gamma + 2m_3 \pi$	$\varphi_1, \varphi_2, \varphi_3$	$2\Gamma' + 2k_3 \pi$ , $2\Gamma' + 2k_2 \pi$ , $\Gamma' + 2k_1 \pi$	$90^\circ \pm \varphi_3, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_1$ (parallel component) $\pm \varphi_3, \pm \varphi_2, \pm \varphi_1$ (orthogonal component) where $\Gamma - \Gamma' = 2/\pi$
$\Gamma + 2m_1 \pi$ , $2\Gamma + 2m_2 \pi$ , $2\Gamma + 2m_3 \pi$	$\varphi_1, \varphi_2, \varphi_3$	$2\Gamma' + 2k_3 \pi$ , $2\Gamma' + 2k_2 \pi$ , $\Gamma' + 2k_1 \pi$	$90^\circ \pm \varphi_3, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_1$ (parallel component) $\pm \varphi_3, \pm \varphi_2, \pm \varphi_1$ (orthogonal component) where $\Gamma - \Gamma' = (2l + 1) \pi$
$2\Gamma + 2m_3 \pi$ , $2\Gamma + 2m_2 \pi$ , $\Gamma + 2m_1 \pi$	$\varphi_3, \varphi_2, \varphi_1$	$\Gamma' + 2k_1 \pi$ , $2\Gamma' + 2k_2 \pi$ , $2\Gamma' + 2k_3 \pi$	$90^\circ \pm \varphi_1, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_3$ (parallel component) $\pm \varphi_1, \pm \varphi_2, \pm \varphi_3$ (orthogonal component) where $\Gamma - \Gamma' = 2/\pi$

<u>First Stage Phase Delays</u>	<u>First Stage Orientations</u>	<u>Second Stage Phase Delays</u>	<u>Second Stage Orientations</u>
$2\Gamma + 2m_3 \pi$ , $2\Gamma + 2m_2 \pi$ , $\Gamma + 2m_1 \pi$	$\varphi_3, \varphi_2, \varphi_1$	$\Gamma' + 2k_1 \pi$ , $2\Gamma' + 2k_2 \pi$ , $2\Gamma' + 2k_3 \pi$	$\pm \varphi_1, \pm \varphi_2, \pm \varphi_3$ (parallel component) $90^\circ \pm \varphi_1, 90^\circ \pm \varphi_2, 90^\circ \pm \varphi_3$ (orthogonal component) where $\Gamma - \Gamma' = (2l + 1) \pi$

Wherein  $m_1, m_2, m_3, k_1, k_2, k_3$  and  $l$  are integers  $(0, \pm 1, \pm 2, \dots)$ .

15 (previously amended): The interleaver as recited in ~~claim 1~~ claim 14, wherein the birefringent element assembly comprises:

a first birefringent element having an angular orientation of  $45^\circ$  with respect to a polarization direction of light input to the birefringent element assembly and has a phase delay of  $\Gamma$ ; and

~~the~~ a second birefringent element has an angular orientation of  $-21^\circ$  with respect to a polarization direction of light input to the birefringent element assembly and has a phase delay of  $2\Gamma$ ;

16-18 (cancelled)

**Correction to Typos in Table III for Claim 6 (Previously Presented – on March 9, 2004):**

In the patent publication US 2003/0025998 A1 (Feb. 6, 2003), there are four typos for Table III under claim 6 and paragraph [0143]:

“100<sub>1</sub>” (happened at two places) should be “ $\varphi_1$ ” and “100<sub>3</sub>”( happened at two places) should be “ $\varphi_3$ ”, respectively.

Table III in the specification paragraph [0129] is correct. Please help to make correction if this application is allowed to issue.